

WHAT IS CLAIMED IS:

1. A process for producing a methyl methacrylate, the process comprising the steps of:

(i) decomposing methyl t-butyl ether to obtain an isobutylene and a methanol,

(ii) oxidizing the isobutylene to obtain at least one compound selected from a methacrylic acid and a methacrolein and

(iii) esterifying at least one compound selected from the methacrylic acid and the methacrolein with the methanol to produce a methyl methacrylate.

2. The process according to claim 1, further comprising a step of separating the isobutylene from the decomposition reaction mixture prior to the oxidation step of the isobutylene.

3. The process according to claim 2, further comprising a step of recovering a methanol from the remaining mixture obtained after the separation of the isobutylene, prior to the esterification step.

4. The process according to claim 3, wherein the recovered methanol has a 95 % by weight or more of methanol based on the recovered methanol and contains at least one compound selected from t-butyl alcohol, water and methyl t-butyl ether.

5. The process according to claim 3, further comprising a step of purifying the recovered methanol.

6. The process according to claim 5, wherein the

purifiedmethanol contains about 95 % by weight or more of methanol based on the purified methanol.

7. The process according to claim 5, wherein the purifiedmethanol contains about 99 % by weight or more of methanol based on the purified methanol.

8. The process according to claim 5, wherein the purified methanol contains about 99.9 % by weight or more of methanol based on the purified methanol.

9. An apparatus for producing a methyl methacrylate, the apparatus comprising:

(a) a reactor for catalytic decomposition of methyl t-butyl ether to obtain a reaction mixture containing an isobutylene and a methanol,

(b) separation means for separating the isobutylene from the reaction mixture,

(c) recovery means for recovering the methanol from the remaining mixture obtained after the separation of the isobutylene,

(d) a reactor for oxidation of the isobutylene to obtain at least one compound selected from a methacrylic acid and a methacrolein and

(e) a reactor for esterification of at least one compound selected from the methacrylic acid and the methacrolein with the methanol.

10. The apparatus according to claim 9, wherein the

methanol obtained by recovery means (c) has a concentration of about 95 % by weight.